



## Ocean warming and spread of pathogenic vibrios in the aquatic environment

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### Abstract:

Vibrios are among the most common bacteria that inhabit surface waters throughout the world and are responsible for a number of severe infections both in humans and animals. Several reports recently showed that human *Vibrio* illnesses are increasing worldwide including fatal acute diarrheal diseases, such as cholera, gastroenteritis, wound infections, and septicemia. Many scientists believe this increase may be associated with global warming and rise in sea surface temperature (SST), although not enough evidence is available to support a causal link between emergence of *Vibrio* infections and climate warming. The effect of increased SST in promoting spread of vibrios in coastal and brackish waters is considered a causal factor explaining this trend. Field and laboratory studies carried out over the past 40 years supported this hypothesis, clearly showing temperature promotes *Vibrio* growth and persistence in the aquatic environment. Most recently, a long-term retrospective microbiological study carried out in the coastal waters of the southern North Sea provided the first experimental evidence for a positive and significant relationship between SST and *Vibrio* occurrence over a multidecadal time scale. As a future challenge, macroecological studies of the effects of ocean warming on *Vibrio* persistence and spread in the aquatic environment over large spatial and temporal scales would conclusively support evidence acquired to date combined with studies of the impact of global warming on epidemiologically relevant variables, such as host susceptibility and exposure. Assessing a causal link between ongoing climate change and enhanced growth and spread of vibrios and related illness is expected to improve forecast and mitigate future outbreaks associated with these pathogens.

**Source:** <http://dx.doi.org/10.1007/s00248-012-0163-2>

### Resource Description

#### Exposure :

weather or climate related pathway by which climate change affects health

Food/Water Quality

**Food/Water Quality:** Pathogen

#### Geographic Feature:

resource focuses on specific type of geography

Ocean/Coastal

#### Geographic Location:

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resource focuses on specific location

Non-United States

**Non-United States:** Europe

**European Region/Country:** European Region

**Other European Region:** North Sea

**Health Impact:** 

specification of health effect or disease related to climate change exposure

Infectious Disease

**Infectious Disease:** Foodborne/Waterborne Disease

**Foodborne/Waterborne Disease:** Cholera, Vibrios

**Model/Methodology:** 

type of model used or methodology development is a focus of resource

Methodology

**Resource Type:** 

format or standard characteristic of resource

Review

**Timescale:** 

time period studied

Time Scale Unspecified